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REMARKS

Thorough examination by the Examiner is noted and appreciated.

The Claims have been amended to clarify Applicants disclosed and claimed invention.

Support for the amended claims is found in the original claims and/or Specification, for example in original claims 5, 6 and 17, 18 and in the specification at paragraph 0045:

"As is understood by a person skilled in the art, in order to provide for optimized chamber selection within the multi-chamber fabrication tool for fabricating the substrate within the multi-chamber fabrication tool within the context of the series of chamber constraints, the series of process constraints and the series of substrate constraints, it is typical and preferred that the series of chamber constraints, the series of process constraints and the series of substrate constraints, as well as the series of process and chamber options be entered into a database and that there be developed an algorithm which operates in conjunction with the series of chamber constraints, the series of process constraints and the series of substrate constraints such as to **prioritize the constraints and thus select a chamber within the available process and chamber options within the multi-chamber fabrication tool in accord with the prioritized constraints or in the alternative to select a chamber within the multi-chamber** fabrication tool without violating any of the constraints, either of which may be viewed as

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optimizing utilization of the multi-chamber fabrication tool."

No new matter has been entered.

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PREMATURE FINALITY

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Applicants respectfully request withdrawal of Finality since application of the newly applied art (Jevtic and Jevtic II) was not necessitated by Applicants amendments, but rather, the newly cited art represents more pertinent art to Applicants disclosed invention. Since Applicants are entitled to a complete search and examination of their invention including reasonably anticipated limitations that may be claimed to avoid multiple searches resulting in piecemeal examination, Applicants respectfully request withdrawal of finality of rejection to either allow entry of the present amendments to place the application in condition for allowance or for an opportunity to meaningfully amend Applicants claims to define over the newly cited art.

For example, Applicants respectfully refer Examiner to the following portions of the MPEP:

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MPEP 706.07

Before final rejection is in order a clear issue
should be developed between the examiner and applicant.
To bring the prosecution to as speedy conclusion
as possible and at the same time to deal justly by both
the applicant and the public, the invention as disclosed
and claimed should be thoroughly searched in
the first action and the references fully applied; and in
reply to this action the applicant should amend with a
view to avoiding all the grounds of rejection and
objection. Switching from one subject matter to
another in the claims presented by applicant in successive
amendments, or from one set of references to
another by the examiner in rejecting in successive
actions claims of substantially the same subject matter,
will alike tend to defeat attaining the goal of
reaching a clearly defined issue for an early termination,
i.e., either an allowance of the application or a
final rejection.

MPEP 904.03

It is normally not enough that references
be selected to meet only the terms of the
claims alone, especially if only broad claims are presented;
but the search should, insofar as possible, also
cover all subject matter which the examiner reasonably
anticipates might be incorporated into applicant's
amendment. Applicants can facilitate a complete
search by including, at the time of filing, claims varying
from the broadest to which they believe they are
entitled to the most detailed that they would be willing
to accept.

MPEP 706.07(A)

A second or any subsequent action on the merits in
any application or patent involved in reexamination
proceedings should not be made final if it includes a
rejection, on prior art not of record, of any claim
amended to include limitations which should reasonably
have been expected to be claimed. See MPEP
§ 904 *et seq.*

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Claim Rejections under 35 U.S.C 103

1.   Claims 1-6, and 13-18 stand rejected under 35 U.S.C 103(a))
as being unpatentable over Jevtic (6,201,999).

Jevtic discloses a process scheduler for a multi-chamber
tool where a trace (mapping a required process sequence onto a
set of chambers within the multi-chamber tool) (see col 5, lines
1-9) is first provided; then a schedule generator operates to
determine an optimal sequencing of a process substrate for a
given processing sequence and tool configuration (see Abstract;
col 4, lines 21-30; col 4, lines 61-62).

The scheduler operates to determine a schedule tree (order
that wafer visits a chamber to fulfill a processing sequence).
The schedule tree represents all possible schedules that will
fulfill a given trace (col 3, lines 9-37). A throughput model
is then applied to each of the schedules to determine the
highest throughput.

Jevtic discloses that more than one chamber may fulfill the
same process (parallel) (col 5, lines 10-15), in a required
processing sequence. Jevtic also discloses that more than 1
wafer may be in a chamber at one time (see col 6, lines 54-61).

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Thus, Jevtic fails to disclose several aspects of Applicants disclosed and claimed invention including:

"first defining for each chamber within the series of chambers a minimum of one fabrication process to provide a series of fabrication processes corresponding with the series of chambers prior to processing a substrate within said series of chambers, **wherein at least one fabrication process is undertaken within more than one chamber and at least one chamber has defined therein more than one fabrication process including the at least one fabrication process which is undertaken within more than one chamber;"**

Nowhere does Jevtic disclose or suggest **at least one chamber has defined therein more than one fabrication process including the at least one fabrication process which is undertaken within more than one chamber.**

In addition, nowhere does Jevtic disclose or suggest:

"selecting the at least one chamber for processing the substrate while employing the at least one fabrication process which is undertaken within more than one chamber, the at least one chamber selected to optimize utilization of the multi-chamber fabrication tool, **said selection made according to prioritized contraints comprising process constraints with**

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respect to said series of fabrication processes, chamber constraints with respect to said series of chambers, and substrate constraints with respect to said substrate;"

Rather, Jevtic generally discloses a "processing capability" of the multi-chamber processing tool where a **required process sequence in mapped onto the set of chambers** to form a trace, prior to performing a **throughput optimization analysis (based on a given process sequence mapped onto available chambers) to produce the highest throughput schedule** based on substrate position (chamber availability) and processing time (e.g., col 14, lines 57- col 15, line 7).

In contrast, the method of Applicants selects chambers within the multi-tool process including at least one chamber that has defined therein more than one fabrication process based on prioritized constraints. In the method of Applicants, the chambers are select to achieve optimal utilization based on one or more factors including process constraints, chamber constraints, and substrate constraints.

Thus, optimization routine of Jevtic works by a different principle of operation; first mapping chambers (buy an undisclosed process), then **optimizing throughput** based only on wafer position and processing time.

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The teachings of Jevtic do not produce the elements of Applicants disclosed or claimed invention and is therefore insufficient to make out a prima facie case of obviousness.

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)*.

2. Claims 5-6, and 17-18 stand rejected under 35 U.S.C 103(a)) as being unpatentable over Jevtic, above and further in view of Jevtic et al. (Jevtic II) (6,519,498).

Applicants reiterate the comments made above with respect to Jevtic.

Jevtic II disclose a method and apparatus for analyzing scheduling routines for moving a process wafer through a multi-chamber wafer processing tool (see Abstract). Jevtic II overcomes problems in the prior art that use a priority based scheduling routine (algorithm) where the routine prioritizes

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chambers within the cluster tool and computes an optimal

schedule to maximize throughput (col2, line 63 - col 3, line -

13). One of the problems with prior art methods of scheduling

is the large number of possible scheduling algorithms that must

be individually considered and tested.

Jevtic II overcomes the prior art problems by generating

all possible schedules using a particular scheduling algorithm

for a particular process (i.e., **priorities assigned to each**

chamber) by first selecting the robot type and the schedule type

and then determining performance results (throughput) for each

schedule (set of chamber assigned priorities) by the use of a

simulator (col 4, lines 50- col 5, line 5-9). **The schedule**

(set of chamber assigned priorities) with the highest throughput

is "deemed" optimal. In particular Jevtic II discuses the use of

the simulator with the on-line priority assigned scheduling

routine (OLPAS) (col 4, lines 62-65) and OLPAS with a multi-

transfer space manager (OLPAS-MTS) (col 5, lines 10-19).

Jevtic II discloses that the simulation routine includes

various **simulation parameters** that are predefined for each

simulated chamber (col 6, lines 10-14). Jevtic II also

discloses that scheduling parameters may be changed

automatically or manually (col 6, lines 43-46). Jevtic II

further teaches that an **initial priority index for the chambers**

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(schedule) may be manually assigned or generated automatically
(col 7, lines 25-49). In an example, Jevtic II discloses
processes where **each chamber performs a different process** (col
7, lines 33-35) or where one chamber performs the process (col
7, lines 38-41). In addition, the **priorities of the various
chambers are dynamically changed** (based on availability) from
the initial assignment during movement of the wafer (col 8,
lines 1-15) through the multi-chamber (cluster) tool or upon the
occurrence of a triggering event (col 18, lines 49-58). Jevtic
II further discloses the simulator may use trigger or event
routines that are coupled to execution of the scheduling
algorithm (such as time based trigger indicating a chamber will
be available for processing) (col 6, lines 15-29).

Thus, the combination of Jevtic and Jevtic II fails to
disclose several aspects of Applicants disclosed and claimed
invention including the aspects in bold type below:

"first defining for each chamber within the series of
chambers a minimum of one fabrication process to provide a
series of fabrication processes corresponding with the series of
chambers prior to processing a substrate within said series of
chambers, wherein at least one fabrication process is undertaken
within more than one chamber **and at least one chamber has
defined therein more than one fabrication process including the
at least one fabrication process which is undertaken within more**

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than one chamber;

selecting the at least one chamber for processing the substrate while employing the at least one fabrication process which is undertaken within more than one chamber, the at least one chamber selected **to optimize utilization** of the multi-chamber fabrication tool, **said selection made according to prioritized contraints comprising process constraints with respect to said series of fabrication processes, chamber constraints with respect to said series of chambers, and substrate constraints with respect to said substrate;"**

Rather, the disclosure of Jevtic and Jevtic II are primarily aimed at managing the movement of wafers through a multi-chamber tool to optimize throughput. Jevtic and Jevtic II do not disclose the selection of chambers prior to processing to **to optimize utilization** of the multi-chamber fabrication tool based on chamber constraints, process constraints and substrate constraints and where at least one chamber performs more than one process. Nowhere do Jevtic and Jevtic II suggest or disclose such constraints or an algorithm considering the constraints to select chambers for processing **to optimize utilization** of the multi-chamber fabrication tool.

Thus, the combination of Jevtic and Jevtic II fails to produce Applicants disclosed and claimed invention and is

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therefore insufficient to make out a *prima facie* case of obviousness.

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

Conclusion

Based on the foregoing, Applicants respectfully request Examiner allow entry of the amendments to place the Application in condition for allowance or to withdraw Finality of Rejection. Applicants respectfully submit that the Claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

In the event that the present invention as claimed is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicants' representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

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                              Respectfully submitted,

                              Tung & Associates

                              Randy W. Tung

                              Reg. No. 31,311

                              Telephone: (248) 540-4040

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